



Nevada Ready 21 Year 2 Implementation Report

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Nevada Commission on Educational Technology

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EXECUTIVE SUMMARY

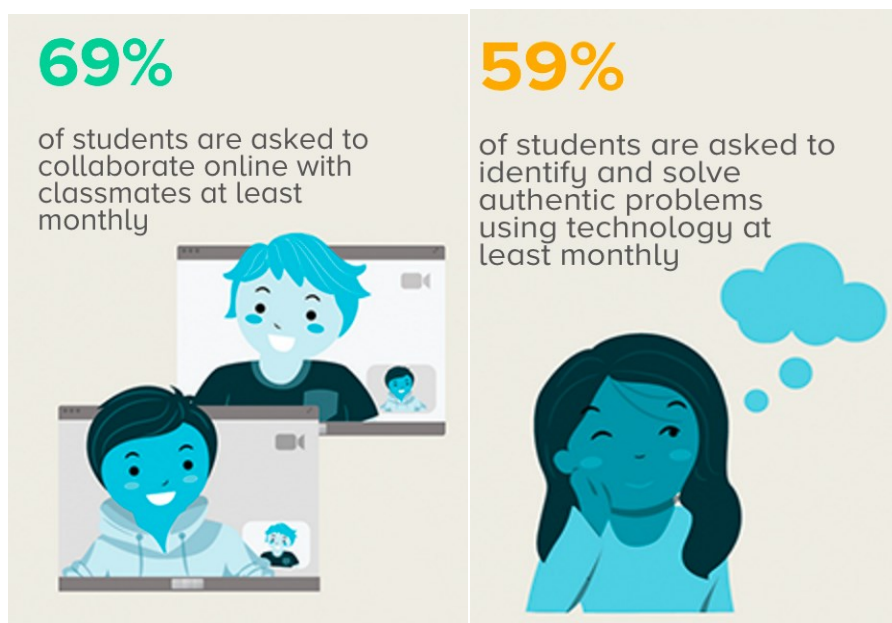
Connecting, communicating, relationship building, supporting, training. This is how the Nevada Ready 21 (NR21) state team engaged with NR21 schools during the 2016-17 school year, and by doing so we found out that when you give a kid a Chromebook:

- He connects instantaneously to content and resources beyond the confines of his physical location
- She conducts experiments
- He produces multimedia presentations
- She codes
- He composes music
- She writes: prose, poetry, reflections
- He communicates better and collaborates more frequently
- She captures and edits video that is later used in class projects, health and safety Public Service Announcements, and broadcasting school news
- He is more attentive and engaged in class
- She receives more individualized instruction
- He seeks answers and solves problems
- She is more organized and better able to keep track of assignments and due dates
- He has more opportunities to access web-based supplemental software that improves his math and literacy skills

All of these learning experiences, and more, happened during the inaugural launch of Nevada Ready 21. Across the state, Chromebooks are used with great frequency at every grade level and in every subject area including core content areas, health/PE, CTE, music, art, and other electives. The NR21 Professional Development model is one factor that contributes to the success we are seeing in the frequency and manner in which the Chromebook is being used. During the 2016-17 school year, NR21 Digital Learning Coaches, teachers, and principals had access to hours of web-based and face-to-face training that included webinars, Digital Learning Summits, Google Certified Educator Level 1 training, and online courses offered through Canvas, the NR21 Learning Management System (LMS).

The majority of those who participated in CTL-sponsored webinars agreed that there was a clear connection between the webinar content and the Nevada Ready 21 program (91%). Many participants

also agreed that the webinar content was relevant to their job (79%) and that the information they received helped them generate ideas about their vision for 21st century learning at their school (79%). The courses offered on Canvas were also well-received. One teacher who completed the Project-Based Approaches course shared in her final reflection that she liked how the course made her focus on 21st century skills. She wrote, “I have perused them, but to be honest, I have not incorporated them in lesson plans until this course. I realized how much these standards reflect my beliefs in teaching and why I went into education in the first place.” We can also turn to our BrightBytes data for evidence that 21st century learning is taking place in classrooms. Across the state, 69 percent of students reported that they are asked to collaborate online with their classmates at least monthly; 59 percent are asked to solve authentic problems using technology at least monthly.



The stated mission of Nevada Ready 21 is to provide all Nevada students an equitable, technology-rich education that supports high standards, an engaging learning environment, and the development of the 21st century skills students will need to fuel the economic growth of the state. Furthermore, Nevada Ready 21 will support educators in their efforts to create more engaging and personalized instruction by providing the essential tools and the ongoing professional development to guide their transformation. As highlighted below, Nevada’s statewide 1:1 initiative is achieving this mission.

Equitable, Technology-Rich Education that Supports High Standards

- Over 19,000 5th-8th graders across the state have a Chromebook that is theirs to use in school and at home during the course of the academic year.

- All 23 of our NR21 schools have Wi-Fi access points that cover every instructional space on campus.
- The Chrome OS is reliable and provides virtually instantaneous access to the Internet and cloud-based software, including the G-Suite of applications (Docs, Sheets, Slides, Sites, Forms).
- Chromebooks are used by every student (including those with IEPs and English Language Learners) in every content area (including core subjects, art, music, health/PE, electives, and CTE).
- Teachers are pushing out their standards-based lesson plans via Canvas and Google Classroom, which facilitates efficiency in grading and a platform for electronic communication between teachers and students.

Engaging Learning Environment

- Teachers are using interactive quiz programs such as Kahoot, Kahoot Live, and Quizlet to check for understanding
- Teachers are digitizing their lessons by creating interactive documents, called HyperDocs. Students access one link provided by the teacher and are self-guided through a series of instructions, links, and tasks, that make learning fun and engaging.
- Students are becoming producers of digital content. They are creating videos, producing school news broadcasts, and developing multimedia presentations.

Development of 21st Century Skills

- Students are using the G-Suite and other software to engage in the 4Cs: critical thinking, communication, collaboration, and creativity.
- Students are using Google Hangout to connect with other students within the state, across the country, and around the globe.
- Students are becoming self-directed learners, utilizing the tools and resources at hand to solve real problems.
- Students are participating in Google CS, a computer science class that guides them through the completion of projects focused around themes such as Storytelling, Art, Fashion & Design, and Game Design.
- Students are using Google Tilt Brush to draw and paint in a 3D virtual space.

Engaging and Personalized Instruction

- Students are using programs such as Study Island, ST Math and LanguageLink to self-pace through supplemental standards-based math and literacy content.

- Teachers are differentiating instruction by using rotation models that include small group direct instruction and individual student work on the Chromebook.
- Teachers are using web-based resources to modify and adapt lessons for IEP and ELL students. In a 1:1 classroom this means that all students are engaged in the content.

On Going Professional Development

- During the 2016-17 school year NR21 educators had the following professional development opportunities:
 - 15-hour Nevada Ready Set Go! Canvas Course
 - 20 one-hour webinars, each focused on a different tool or instructional strategy including:
 - An Overview of Google Classroom
 - Google Drive Basics
 - Advanced Google Classroom
 - Introduction to Desmos Graphing Calculator
 - Introduction to WeVideo
 - Introduction to NCLab
 - Introduction to Noteflight
 - Regional Professional Development (Clark County, Carson City, Elko)
 - Digital Learning Summits
 - Google Certified Educator Level 1 Training and Testing
 - Google Admin Console Certification Training
 - 2-credit Canvas courses
 - Collaboration in the Digital Classroom
 - Project-Based Approaches
 - HyperDocs and the 21st Century Learner
 - WeVideo and the 21st Century Learner
 - Additional face-to-face and virtual support from Professional Development Strategists
 - Ongoing site-based professional development

Our NR21 schools are in various places along the continuum of being a transformed school, fully immersed in technology-enabled 21st century teaching and learning. Recognizing that transformation is a process that occurs incrementally over time, Nevada Ready 21 is making tremendous strides in setting our schools, administrators, teachers, and students on the path to success. Now that we are on our way, we seek to build upon our initial successes by supporting sustainability for Cohort 1 and preparing for Cohort 2.

INTRODUCTION

Nevada Ready 21 (NR21) is a statewide one-to-one technology and learning initiative supporting an initial cohort of grantees that includes schools in six districts and three state-sponsored charter organizations. Funded by \$20M from the state legislature for the 2015-2017 biennium, with oversight by the Nevada Commission on Educational Technology, NR21 began the 2016-17 school year with Chromebooks distributed to over 19,000 students and 1,000 teachers across eastern, northern, and southern Nevada.

Nevada Ready 21 is supported by a state team that includes the Program Director, Communications Officer, Performance Manager, and Professional Development Strategists. The state team works collaboratively with the device vendor, CTL, and CTLs' subcontractors to provide schools with a 1:1 solution that includes a durable device, technical assistance, a repair depot, high quality, on-going professional development, and access to actionable data through the BrightBytes platform.

This report includes an overview of Year 2 (school year 2016-17) implementation and outcomes, and is divided into four sections. Section One includes evidence of 21st century learning in our NR21 schools. Section Two highlights affordances of being a 1:1 school. Section Three provides an overview of the key elements of NR21 that have sustainable impact. Section Four is a summary of NR21 performance management.

Table 1. NR21 Statewide Implementation Data

School Districts	6
State Sponsored Charters	3
Schools	23
Student Devices	19,041
Staff Devices	1,030
Installed Wi-Fi Access Points	836
Average Number of Seats Covered by Each Access Point	19
Nevada Ready Set Go! Course Completion Rate	86%
2-credit Canvas Course Enrollment	136
2-credit Canvas Course Completion Rate	63%
Staff Who Became Google Certified Educators, Level 1	53
Staff Who Became Google Certified Educators, Level 2	7
Staff Who Became Google Certified Trainers	4
IT Staff Who Earned G Suite Administrator Certification	7

TALES OF 21ST CENTURY LEARNING

Putting a device in the hands of every student in the classroom, exponentially increases the opportunities teachers have to provide individualized, differentiated instruction. In gathering data from Digital Learning Coaches (DLCs), teachers, administrators, and students, we know that teachers are using Chrome extensions to address the needs of English Language Learners; using the NR21 Toolkit to facilitate project-based learning; and engaging their special needs student population.

PROJECT-BASED LEARNING

Access to technology is not a prerequisite for delving into project-based learning, but teaching in a 1:1 classroom makes it easier to execute. This, in turn, increases the frequency with which teachers provide opportunities for students to engage in project-based learning. One of the NR21 Toolkit products, WeVideo, was used across content areas to engage students in project-based learning.

"The ELA department has built their units using a project based focus. The projects have been supported and implemented using the technology provided. For example, WeVideo has been a larger support in the 7th grade ELA as they teach different components and the students put all their learning together building a video that demonstrates their understanding."

"Our school has completely changed our instructional focus with the NR21 program. Using the technology as the impetus, we have introduced project based learning into all core subject areas with tremendous success. This year, for the first time ever, grade levels are being introduced to an end of the year culminating cross-curricular project (Math, Science, ELA, Social studies). This 3-week project will be based on current grade level standards and allow students to show off skills that they have developed over the course of the school year. Students will use technology for research and presentations, with community and parent nights scheduled to show off their projects."

SPECIAL EDUCATION STUDENTS

The NR21 Chromebook is in the hands of all students, including those who receive special education services. The device functions as an equalizer that makes special education students "feel like the other kids" when they are in class or riding the school bus. The Chromebook enables students' individualized, self-paced instruction without them being noticed as "different."

ENGLISH LANGUAGE ACQUISITION

English Language Learners (ELL) are using *Read&Write*, a Google Chrome extension, to improve their writing and reading comprehension skills. The primary features include text-to-speech, which students use to listen for errors that they can correct before submitting an assignment; a text and picture dictionary that helps improve vocabulary and reading comprehension; and word prediction, which offers them a list of suggested words as they are type. *Read&Write* helps ELLs become more involved in their own learning and also allows teachers to personalize instruction. As one teacher at Eagle Valley Middle school shared, "Today I pushed out an assignment on Google Classroom where they had to type

their second draft. When they were done typing, they opened the *Read&Write* app and used the text-to-speech to listen to what they wrote. For my language acquisition kids, it's an amazing tool. It's what they need to get the assignment done."

Teachers are also using the Chromebook apps to support instructional strategies. A DLC shared, "ELL teachers were trained in GLAD (Guided Language Acquisition Development) and have been coupling GLAD strategies with the Chromebooks. Using a variety of built-in tools within the Chromebooks, ELL teachers have been able to support language acquisition for second language learners."

CRITICAL THINKING, COMMUNICATION, COLLABORATION, CREATIVITY

"In their recent investigation of 21st Century Learning, *National Academies Press* found that rote learning does not support the educational transfer necessary to tackle the complex problems demanded by intensified academic standards. Students must be exposed to unfamiliar problems and encouraged to design meaningful solutions. Technology is a tool for such problem solving. In addition to meeting traditional academic standards, students must also be prepared to tackle the demands of a modern world and modern workforce. A research report from *Adobe Education* notes that, "In today's world, a proficient employee needs to be computer literate, visually literate, information literate, media literate, and digitally literate." (Retrieved from BrightBytes, May 2017)

PROFILES OF 21ST CENTURY TEACHING AND LEARNING

NR21 students are engaged in a variety of exciting learning opportunities that allow them to engage in authentic learning experiences. They are connecting to students around the globe, interviewing celebrities, and producing daily and weekly news broadcasts, coding, and winning science fairs.

HANGING OUT

Students at Pinecrest Academy-St. Rose use Google Hangout on their Chromebooks to connect to students across the state, the country, and around the globe. They are also using WeVideo to capture their virtual and in-person encounters with industry professionals and entertainers including, NBC Nightly News host, Lester Holt; Rajen Sheth from Google Enterprise, who conceived the idea of Gmail; Holocaust survivor and author, Ben Lesser; international recording artists, Los 5; and retired aerospace engineer, Billy Max Coleman.

Students at Churchill County Middle School and Pinecrest Inspirada participate in Mystery Hangouts. A Mystery Hangout introduces students in one class to students in another class. The goal is for students to ask questions and use map skills to find the location of the partner classroom. At Churchill County Middle School students prepared lessons they planned to teach on bacteria and food safety to a class of 5th graders in a mystery location.

21ST CENTURY SCIENCE FAIR WINNERS

Students at Pinecrest Academy-Inspirada used their Chromebooks to develop projects for the UNLV Science Fair and they came away individual and team winners. The DLC at Pinecrest Inspirada posted on the Google+ Forum, "They really got into designing and inventing! It was awesome to see them using their CTL Chromebooks and putting their new tech skills to work."

CODING

Spring Creek Middle School held its first Technology & Coding Night and also participated in An Hour of Code. Both events brought together students, teachers, and parents. The principal at Spring Creek Middle School shared, "What a great experience for our students and their parents to come together with our staff to get excited about Computer Science! Thanks NV Ready 21 for helping us with the Chromebooks to have an event like this!"

AFFORDANCES OF BEING A 1:1 SCHOOL

The obvious affordance of going 1:1 is that students have ready access to online textbooks, web-based resources, teacher-created materials, supplemental software, and a learning management system. Throughout the school year we spoke with students, teachers, digital learning coaches, and principals to find out what they feel are the affordances of being in a 1:1 school. The following list highlights quotes that are representative of the data we gathered from various stakeholders.

Streamlining Administration of State Assessments

"I'm looking forward to doing testing. We won't have to do it in waves. Last year we had multiple weeks. We have two computer labs and two laptop carts. We had to cycle kids through, some testing later in the day than we wanted to. Now every 5th-8th grader can test at the exact same time on the same day. Now we can test later, which gives [the students] more learning time. That month of testing we used last year now gives us three more weeks of instructional time before we test for a week."

~NR21 Principal

Building Capacity by Developing Teacher Leaders

"A big success has been our art teacher. He's in his 30s. He came in the beginning and told me he thought this was being shoved down his throat and he wasn't on board. But then he came around and worked on some things in Google. Then he used it for warm ups. Now his students are creating digital portfolios and he's now on our "Teachnology" Committee."

~NR21 Digital Learning Coach

Facilitating Teacher Collaboration

"We have a subject area/grade level team that was not collaborating at the beginning of the school year. Now they are collaborating. They are using the same tools. They collaborate on assessments. [The Chromebook] brought the department together. I think that's a huge success for the teachers. They are using Canvas and they have a workroom in Canvas so any teacher can be a part of it. They can collaborate there and then take what they want to put into their own classroom."

~NR21 Digital Learning Coach

"One of the biggest benefits that I see is it increasing teacher collaboration. They are sharing through Google Classroom. I've witnessed more hallway collaboration. They are sharing things and talking about lessons they created. Something else that's cool is that I've seen more cross-curricular collaboration."

~NR21 Principal

Developing College and Career-Ready 21st Century Learners

"One success has been career-readiness. Our kids will graduate and can roll right out of secondary education into a career and be familiar with the Google tools. Our kids are going to have a huge advantage in the workplace. We can't measure that now, but when our kids go out, companies will ask them how comfortable they are using the Google tools and our students will be confident in that area."

~NR21 Digital Learning Coach

"This is a Title 1 school and [our students] didn't have this kind of access. Some, not a lot, don't have internet access at home. When they first got [the Chromebooks], they weren't staying on task. Now we're all working together to keep them on task. For instance, I have a broadcast class. I introduced WeVideo. There was a 5th grade student who took it and ran. He has created videos beyond what I introduced to them. The students were talking on Edmodo and one kid started asking him how to do what he did [on his video] and he was helping

them on Edmodo. And these were discussions happening after school. One kid suggested on Edmodo that instead of going to recess they work on their project."

~NR21 Digital Learning Coach

Increasing Student Responsibility

"Best thing about it is not having to worry about paper and copies. There are no more excuses. Kids have their assignments. There is a paper trail. It's all on the drive, which is their organization tool. There's a calendar, there is an agenda. Confusion is eliminated about when things are due. At the beginning of the week I go through the calendar. You can see what kids have worked on. You can see the comments and the edits. I can go in and do some additional comments to help guide the group."

~NR21 Teacher

I'm very disorganized and my backpack is a mess. It's nice to have the CB and have all of the assignments in the same.

~8th grade student

If you have a question about homework, you can email your teacher. One time I forgot I had to do my homework. [My teacher] emailed me and asked if I did my homework, so I did it.

~5th grade student

Funding Requested and Much Needed Teacher Professional Development

"The capabilities we have with the training money. We did one Saturday training for our lead teachers. We'll have two more, focusing on how we build capacity on our campus. We use the extra money we have for PD so teachers can take their time to learn and play."

~NR21 Principal

"I've seen an evolution within staff from a lot of them being very basic to now touching intermediate within the G-Suite. That's been a real success. We've been working on it for a while. Now with the extra grant money we've done some after school PD just specifically based off what the staff has asked for."

~NR21 Digital Learning Coach

Meeting the Learning Needs of All Students

*"I have a lot of ELLs and they will use [the Chromebook] for translation. My 7th grade class just finished *The Outsiders* and they read that online. My ELL and SPED kids use the feature where when you click on the word it tells you the definition and how to pronounce it."*

~NR21 Teacher

"I went to Read&Write training so we've been using that app with IEP students. I have an online curriculum so for my ELL students we are using Google Translate. We are having curriculum being read to students who are not strong in reading."

~NR21 Teacher

Making Access Equitable

"Last year we had BOYD and not everybody had a device. I never had one so I had to partner up. When it's just that person's phone you have to share, you can't get everything done. It was harder when everyone didn't have a device."

~6th grade student

Facilitating Learner Independence

"I always ask questions. Every single day I ask 300 questions and my teachers were sort of rolling their eyes like what's the question going to be this time. I use my Chromebook to look up things and now I'm not the most

annoying kid in my class.”
~6th grade student

Engaging Students

“Last year science was not fun. It’s more digital and more realistic than last year’s science. There are things you can do working on the computer that you can’t do on paper. We can look things up and it’s a lot faster and we can watch videos about it.”
~6th grade student

“I teach a CC (co-taught with SPED teacher] class, one accelerated and one regular, and it works with all students. With the kids low end in CC classes it engages them in a much more powerful way. I teach 8th grade. Sometimes kids give up and it’s a way to be reenergized and get a sense that they are interested in learning. With my accelerated kids I can take them to levels I’ve never been able to take them before.”
~NR21 Teacher

Budget Savings/Cost Avoidance

“Administration anticipates a 50-60% reduction in the paper budget. Teachers will be using Google Classroom to house course expectations and distribution of electronic materials. Printers have been networked to scan and email documents to the teacher so they can have electronic copies for distribution. All teachers have been trained on converting hard copies to electronic documents. Training has also been provided on the use of DocHub so students can complete their digital work that is in a PDF format. Next year semester exams and final exams will be completed by students via Google Forms or GoFormative. Many teachers have already converted tests and quizzes to an online format.”
~NR21 Principal

INVESTING IN SUSTAINABLE IMPACT

As we plan to expand NR21 to more middle schools and high schools across the state, it is important to take stock of the grant-funded investments that support sustainability and long-term impact. Below are essential components that define NR21, guide implementation, and inform outcomes of our 1:1 initiative.

NR21 TOOLKIT

Integrated into the seat price of every NR21 Chromebook is the NR21 Toolkit, which is a collection of web and cloud-based applications that facilitate 21st century learning. The toolkit includes the G-Suite (Docs, Sheets, Forms, Sites, Slides), Canvas (NR21 learning management system), Google Classroom, WeVideo, NCLab, PocketLab, and Noteflight.

CTL and our PDS Team support teachers in using these tools by offering training webinars, in-person workshops, and hands-on sessions at the Digital Learning Summits. Every student and teacher is using the G-Suite, though the extent to which they are doing so may vary. All of our schools used Canvas to take the Nevada Ready Set Go! course and many continue to use it as their LMS of choice. Teachers at some schools are using Canvas and Google Classroom, and others are using Google Classroom exclusively.

Students at almost every school used WeVideo to capture and edit video footage that they incorporated into class presentations, posted on YouTube, or used to broadcast school news. Video projects ranged from recording anti-drug and tobacco public service announcements to documenting speed and performance in PE classes. Schools are using NCLab to teach coding, and some are running an NCLab elective course. Music teachers and their students are using Noteflight to compose music.

BANDWIDTH SUPPORT

Nevada Ready 21 provided supplemental funding to schools that needed to upgrade their bandwidth capacity and/or install additional access points to ensure that all instructional spaces on campus were Wi-Fi enabled. Sixteen of the NR21 schools (70%) opted to work with our device vendor, CTL, to install the access points. Being able to support schools in installing enough access points has made a significant impact on when and where the devices are used. When every instructional area on campus is Wi-Fi enabled, then NR21 is truly supporting anytime/anywhere learning. One school administrator shared, "The grant upgrade of the Wi-Fi made all the difference. Without Wi-Fi, the Chromebooks would have been paper weights. Teachers at are our school were hesitant, but we kept telling them that the Wi-Fi was going to be upgraded. Keep upgrading the Wi-Fi with grant funding."

DEDICATED IT SUPPORT

Nevada Ready 21 provides funding for each NR21 school to employ a full-time IT specialist, and schools, especially the DLCs at our schools, have found this support to be invaluable. In addition to funding this position NR21 provided Google Certified Administrator training for IT staff and they have a direct line to CTL support should they need it. Funding a dedicated IT specialist allows the Digital Learning Coach to focus on instructional technology support rather than technical support, which has a direct impact on the frequency and manner in which teachers and students are using the Chromebook.

TIERED SUPPORT FOR NR21 TEACHERS

Designed as a tiered model that builds site-based internal capacity to support teachers' pedagogical technology needs, the NR21 Professional Development model includes statewide Professional Development Strategists (PDS), site-based Digital Learning Coaches (DLC), and site-based Lead Teachers.

PROFESSIONAL DEVELOPMENT STRATEGISTS

The NR21 Professional Development Strategists provide the foundation for our professional development model. On average, 62% of their time each month is spent in direct or indirect service to NR21 Digital Learning Coaches and teachers. This includes providing virtual and face-to-face training and support, preparing for training, curating content and resources, maintaining the NR21 web presence, and attending NR21-related professional development.

CANVAS COURSES

The PDS team facilitated three online courses for NR21 teachers and coaches: two sections of WeVideo and the 21st Century Learner, and one section of HyperDocs and the 21st Century Learner. Eighty-seven percent of teachers who completed the HyperDocs class strongly agreed that the content they learned will help improve their use of research-based instructional practices, and 93 percent strongly agreed that the course will help them design lessons to reach 21st century students and teach 21st century skills. In the WeVideo course, teachers developed comprehensive lesson plans that require students to produce videos.

FACE-TO-FACE

The PDS team provides and supports site-based in-person professional development for Digital Learning Coaches and teachers. In addition to facilitating ongoing Tech Café/Tech Tuesday events, the PDS team hosted in-person training sessions on Google Sites, HyperDocs, Google Draw, and NC Lab. They also led sessions at NR21 Digital Learning Summits and supported DLCs with one-on-one observations and coaching.

E-MEET UP WITH DIGITAL LEARNING COACHES

The PDS team hosts a monthly eMeetUp for the Digital Learning Coaches. The meetings are well attended and provide coaches an opportunity to share resources, successes, and challenges. DLCs actively participate in these meetings and are invited to give presentations to their peers within this forum.

NVREADY21.COM & WATER COOLER BLOG

The PDS team maintains a program website at nvready21.com. The site provides teachers and coaches with links to resources and strategies, and information regarding upcoming professional development opportunities. Visitors can access the NR21 Water Cooler Blog from the website. The blog is regularly updated with news, information, resources, and strategies related to digital teaching and learning.

BRIGHTBYTES ACTION PLANNING

The PDS team conducts action planning meetings with each school to help them use their BrightBytes data to set implementation priorities for the upcoming school year. These one-hour meetings help schools make decisions based on targeted data points generated from student and teacher questionnaire responses.

DIGITAL LEARNING COACHES

NR21 funds the Digital Learning Coach (DLC) position for each participating school, and the investment in this site-based support position has proven to be invaluable. Digital Learning Coaches are working directly with teachers to provide one-on-one and group training. Specifically, DLCs:

- Facilitate Nevada Ready Set Go!
- Connect teachers to Canvas and Google Classroom
- Develop training sessions
- Push digital resources to teachers
- Provide just-in-time support
- Model technology integration in the classroom
- Co-teach
- Facilitate cross-curricular technology planning
- Facilitate project-based learning

At many of our NR21 schools, DLCs are an integral part of the grant implementation team that meets regularly with the principal to set the course for technology initiatives and training related to NR21. DLCs are building site-based capacity within their schools to support a wide range of technology integration needs, by working directly with a core group of Lead Teachers. They are also building the statewide capacity of our NR21 schools to take bold and innovative steps towards 21st century teaching

and learning. A number of DLCs regularly contribute to the Google+ Nevada Ready 21 Educator Community. It is within this forum that coaches share how students' learning is enhanced by using the NR21 Chromebook.

LEAD TEACHERS

Schools are building capacity to transform the teaching and learning culture through their Lead Teachers. Lead Teachers work directly with DLCs to provide professional development to the larger staff. Each school establishes its own criteria for selecting Lead Teachers. Some are selected by the principal, some default into the role by being a department chair, and others are selected based on their enthusiasm and willingness to help others.

Attesting to the central role Lead Teachers play in capacity building, one principal shared:

One of our goals in the application was building capacity to have teachers as our tech leaders. They are fabulous. They signed up to do this. We took a team to the Google Apps Summit. They signed up to go again this year. We are going to take at least 25 people. They chose the sessions they wanted so it was differentiated. We'll do that again in January. On Friday, we will do a paid PD where our Tech Leaders will host 30 minute sessions for the teachers. Our PD component is essential. We know that some are more ready than the others. We've had full staff PD, we've split them in half. There is also a lot of informal sharing.

MULTIPLE ACCESS POINTS TO TEACHER PROFESSIONAL DEVELOPMENT

Teacher professional development is a Key Component in the NR21 Logic Model and Fidelity Rubric. The NR21 PD model is both proactive and responsive and provides teachers with multiple access points to the training, coaching, and support they need. Teachers' first encounter with NR21 professional development is the Nevada Ready Set Go! course that is offered through Canvas. Nevada Ready Set Go! is a 15-hour, 9-module course that introduces NR21 teachers to the Chromebook, 21st century teaching and learning, digital citizenship, and the G Suite tools.

During the 2016-17 school year, NR21 provided four additional Canvas courses: *Collaboration in the Digital Classroom*, *Project-Based Approaches*, *HyperDocs* and the *21st Century Learner*, and two sections of *WeVideo* and the *21st Century Learner*. Teachers also have access to webinars focused on NR21 Toolkit resources such as WeVideo and NCLab. The webinars are offered monthly, on different days and times, to accommodate teachers' schedules. Teachers may attend the live webinars or access the recording at a later date and time. Teachers also benefit from on-site access to just-in-time support, planned training sessions, and collaboration with their Digital Learning Coach.

Another access point to professional development is the NR21 Digital Learning Summit. The summits are offered regionally to accommodate our schools in southern, northern, and eastern Nevada. The summits are structured as mini-conferences where teachers have the opportunity to attend multiple sessions according to their interest. Our PDS team, some Digital Learning Coaches, and Lead Teachers have facilitated workshops at the summits. The summit workshops are well received. The majority of participants agreed that:

- Expectations for the session were met (88%)
- Participating in the session was a good use of their time (87%)
- They left the summit with tools/resources/strategies they feel confident in using (89%)
- The sessions helped them think about ways to enhance student learning with the Chromebook (89%)
- Overall, the sessions were high quality (92%)

Coinciding with the spring 2017 summits, teachers had the opportunity to take the Google Certified Educator Level 1 training and also sit for the exam. We currently have 53 NR21 staff who have earned their GCE Level 1, which hits our target of five percent of NR21 teachers certified, annually.

CLARITY BRIGHTBYTES PLATFORM

BrightBytes is a data analytics company that uses over 200 data points, organized around research-based frameworks, to provide schools with personalized Insights, Action Plans, and Reports that help them make better decisions about using technology to meeting students' needs. Nevada Ready 21 uses the Technology & Learning module to assist schools in making data-based decisions around instructional practices, professional development, and school policies and procedures.

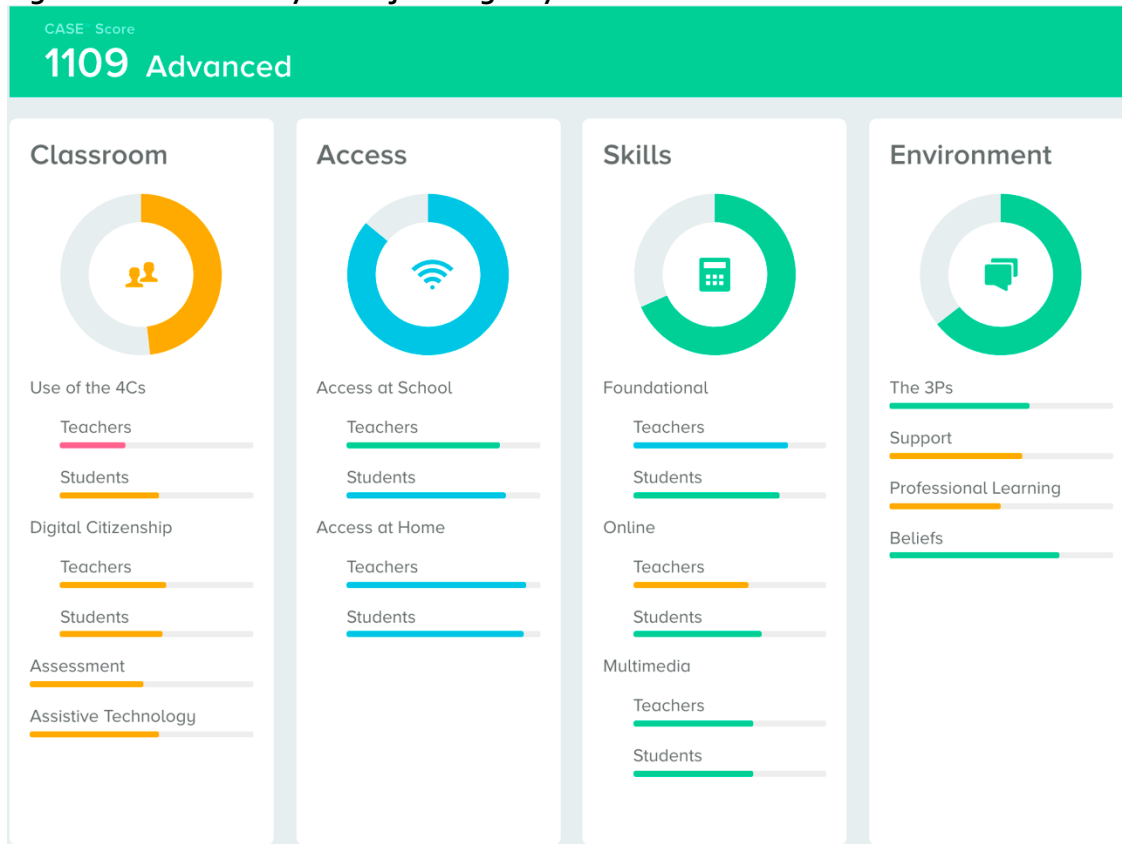
The Technology & Learning module is built around BrightBytes' CASE™ framework that includes indicators and variables related to Classroom, Access, Skills, and Environment. Responses to each questionnaire are used to calculate an overall score between 800 and 1300 that is aligned to a five-color maturity scale: Beginning, Emerging, Proficient, Advanced, and Exemplary. While BrightBytes generates a score, the platform relies heavily on data visualization. A score between 800-899 is color-coded grey and represents "Beginning" on the maturity scale. Emerging (900-999) is pink, Proficient (1000-1099) is yellow, Advanced (1100-1199) is green, and Exemplary (1200-1300) is blue.

Table 2. Indicators Within Each BrightBytes CASE Domain

Classroom	Access	Skills	Environment
<ul style="list-style-type: none"> • Use of the 4Cs • Digital Citizenship • Assessment • Assistive Technology 	<ul style="list-style-type: none"> • Access at School • Access at Home 	<ul style="list-style-type: none"> • Foundational • Online • Multimedia 	<ul style="list-style-type: none"> • Policies, procedures, practices • Support • Professional Learning • Beliefs

Schools administered the BrightBytes Technology & Learning questionnaires to students, teachers/administrators, and parents in September 2016 and April 2017. Each school has access to its own data platform, while the state team has access to school, district, and state-level dashboards. The NR21 statewide CASE score is 1109, or Advanced. As represented in the graphic below, the statewide maturity level for the Classroom domain is Proficient (1041), the maturity level for the Access domain is Exemplary (1230), and the maturity level for the Skills and Environment domains is Advanced (1142 and 1122, respectively).

BrightBytes generates trend data for service agencies on an annual basis, but provides districts and schools with comparisons of the outcomes between fall and spring collection. Twenty-two (96%) of our schools saw an increase in their overall CASE score from fall to spring. Twenty-one (91%) schools saw an increase in their Classroom domain score; 17 schools (74%) saw an increase in their Access domain score; 23 schools (100%) saw an increase in their Skills domain score; and 20 schools (87%) saw an increase in their Environment domain score.

Figure 1. Nevada Ready 21 Project BrightBytes CASE Score

CLASSROOM

Project-wide, the NR21 maturity level for Classroom indicators is Proficient. Our baseline data show 72 percent of teachers reporting that students use their computer in class almost daily; 36 percent of teachers are asking students to use an online space (such as Google Drive) for documents at least weekly; 34 percent of teachers ask students to conduct research at least weekly; and 42 percent of teachers use grade or content-specific software in the classroom at least weekly.

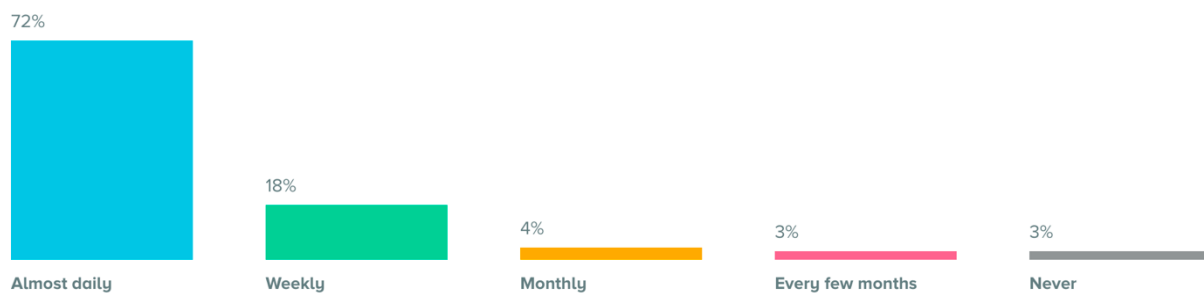
Figure 2. Teacher-Reported Frequency of Student Computer Use in the Classroom

Figure 3. Teachers Ask Students to Use an Online Space for Documents



Figure 4. Teachers Ask Students to Conduct Research

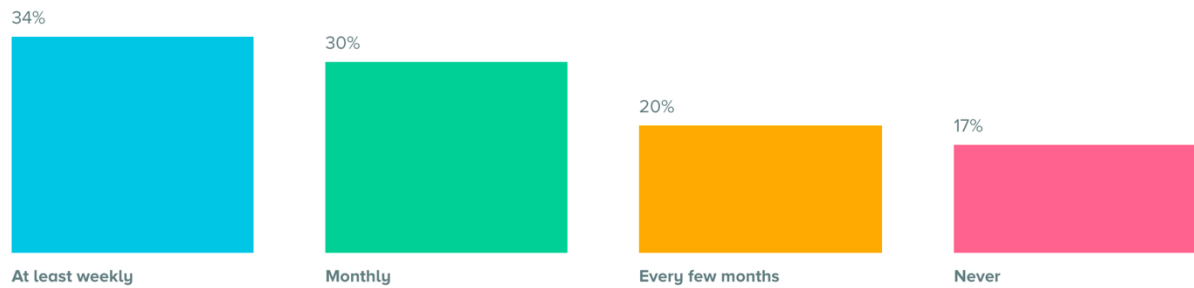
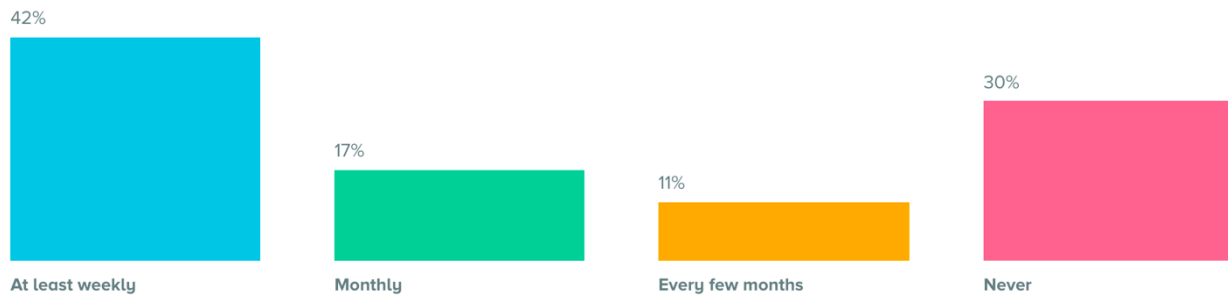


Figure 5. Teachers Use Subject-Specific or Grade-Specific Software in the Classroom



Baseline data from the student questionnaire reveal that at least weekly, 57 percent of students are taught how to act respectfully online, 37 percent of students are asked to collaborate online with classmates, and 46 percent of students are asked to identify and solve authentic problems.

Figure 6. Students are Taught How to Act Respectfully Online

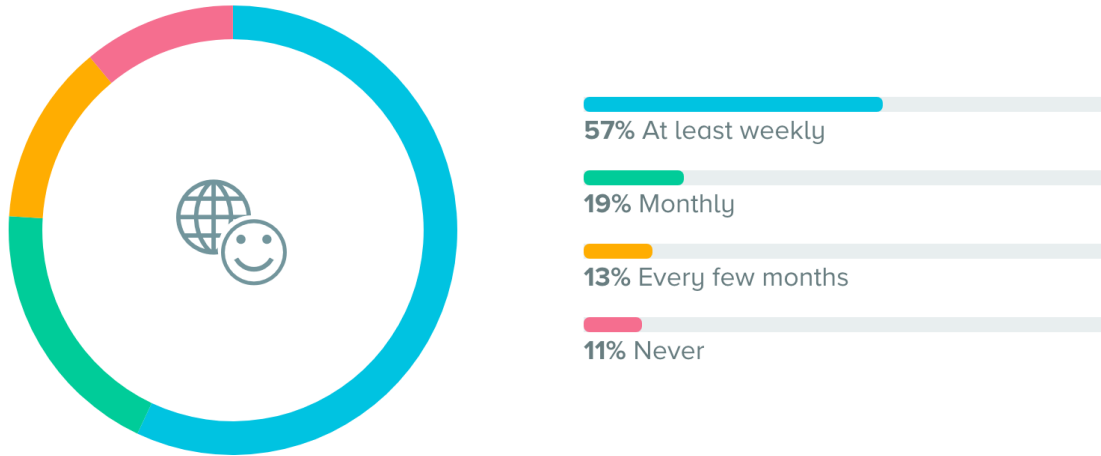
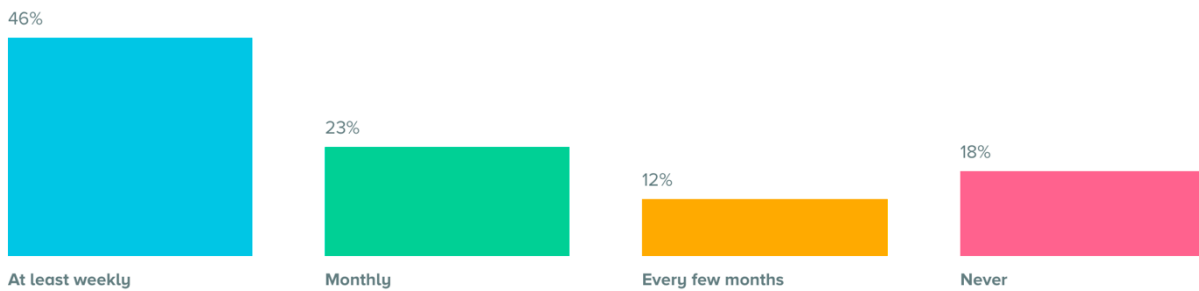


Figure 7. Students are Asked to Collaborate Online with Classmates



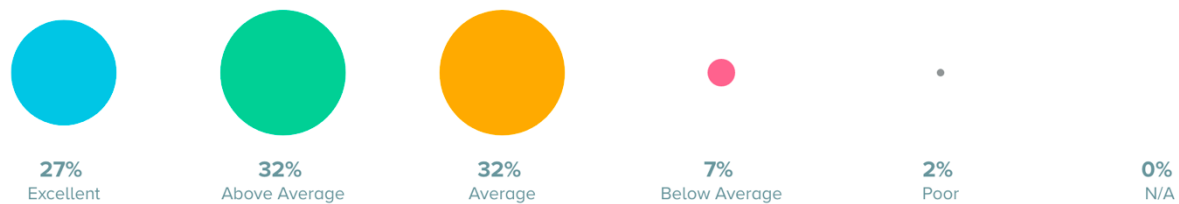
Figure 8. Students are Asked to Identify and Solve Authentic Problems



ACCESS

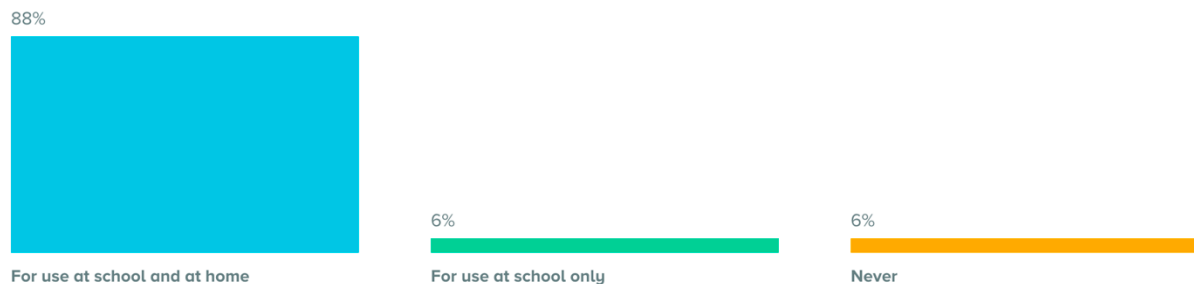
It is not surprising that our Access maturity level is Exemplary, given that every student and teacher has a device; however, the access domain includes additional indicators such as the quality of internet speed. Less than two-thirds of (59%) our NR21 teachers report high quality internet speed at their school. This finding matters because slow internet speeds can affect the frequency with which teachers plan to integrate 21st century learning experiences that include multimedia, streaming video, virtual fieldtrips, or Google Hangouts.

Figure 9. Teachers Report on Quality of Internet Speed at Their School



Data from the Classroom domain indicate that 36 percent of teachers require students to use an online space for documents, and data from the Access domain indicate that the frequency with which this is required is not dictated by their ability to do so. The majority of teachers (88%) reported that their school or district provides an online repository for documents. This gap between access and practice is an area that our PDS and DLCs can address in future professional development.

Figure 10. Teachers Report That Their School or District Provides an Online Repository for School Files



Nearly all NR21 students (95%) report that they have internet access at home. Schools where students do not have internet access at home have purchased mobile hotspots that students can borrow so they can complete their homework, work on class projects, communicate with teachers, and collaborate with classmates. Providing the hotspots is an investment funded by NR21 that further supports equity in access and extends learning beyond the classroom.

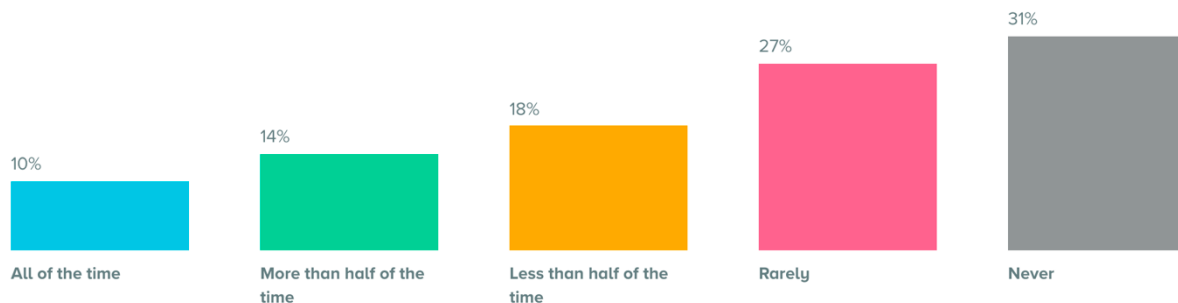
Parents' computer and internet access is an important indicator, as high rates of access make it easier for teachers to engage parents in monitoring and communicating about their child's academic progress. Seventy-seven percent of NR21 parents have access to a desktop computer, 82 percent have access to a mobile computer, 80 percent have access to a tablet, and 97 percent have a smartphone.

SKILLS

Our maturity level for the Skills domain is Advanced. Indicators within this domain include teachers' and students' foundational skills and teachers' and students' multimedia skills. Participants' self-report on foundational and multimedia skills gives us an indication of the areas in which DLCs need to focus skills-based training. Deficient skills in these areas could be a barrier to moving from basic uses of the Chromebook (i.e., taking notes in Google Docs) to increasingly advanced uses.

One measure of teachers' foundational skills is where they turn to for support and the frequency with which they do so. If researching a topic, 78 percent of NR21 teachers reported that they would ask a friend or colleague, compared to 24 percent who reported that they would ask their question in an online network. In-person collaboration among colleagues is critical to building site-based capacity, so these findings are encouraging. The findings also point to an opportunity for DLCs to work with teachers to build their personal learning network by exploring online communities of technology-using teachers. Connecting students to others outside the confines of their school helps build important communication skills that lead to college and career readiness; teachers who are comfortable participating in online communities are more likely to engage their students in doing the same.

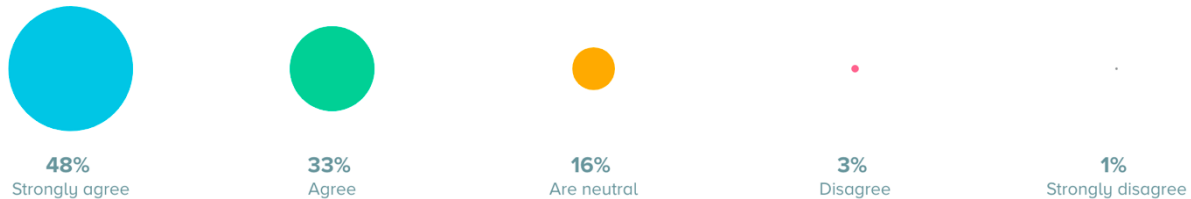
Figure 11. Teacher Frequency of Asking Questions in Online Networks



In fact, student data on seeking out sources when doing research parallels that of teachers. Seventy-one percent of students reported that they ask a friend or teacher to help them when they are researching a topic; only 27 percent of students said they go to online networks to seek help more than half of the time.

NR21 students are very confident in their foundational skills. The majority of students (81%) agreed that they “learn technology easily,” and 67 percent agreed that when faced with a technology-related problem, they can usually find a good solution.

Figure 12. Students’ Agreement with the Statement “I Learn Technology Easily”



Less than half of NR21 teachers find it easy to record and edit audio (45%) and video (43%). This is an important finding because teachers’ comfort with multimedia affects the frequency with which they plan lessons that utilize multimedia. A long-term outcome for NR21 is that students develop a skill set that moves them away from being strictly consumers of digital content, to producers of digital content. Fortunately, students feel slightly more confident in their multimedia skills. Fifty percent of students find it easy to record and edit audio, and 55 percent find it easy to record and edit video. These data will help us extend the success we have already seen in supporting teacher and student training on WeVideo.

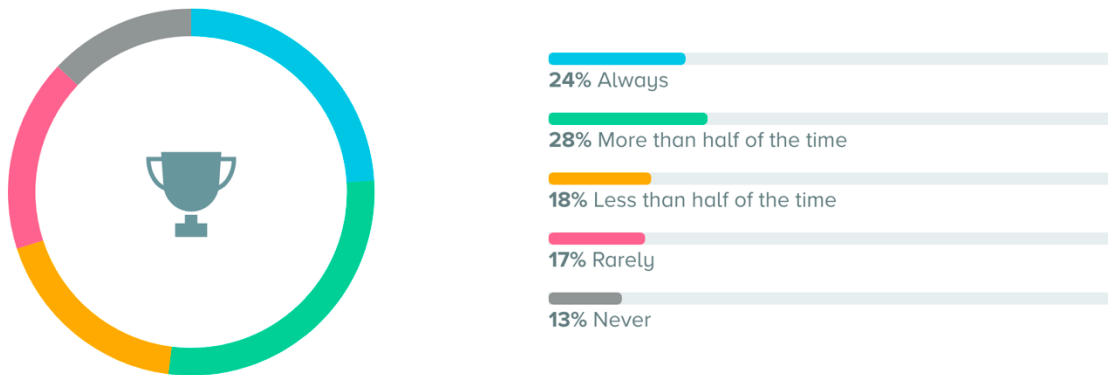
ENVIRONMENT

The NR21 maturity level for the Environment domain is Advanced. This domain includes indicators related to policies, procedures, and practices, as well as teachers’ perceptions about professional learning opportunities. A specific indicator in this domain is the frequency with which teachers discuss technology use during department or grade-level meetings. Sixty-five percent of NR21 teachers report that they almost always discuss technology during department or grade-level meetings. This is important because frequent discussions are an indication that there is a school culture around technology use.

Another indicator in the Environment domain is the extent to which teachers feel rewarded for integrating technology into teaching. Twenty-four percent of teachers report that they always feel rewarded and 28 percent report that they feel rewarded for integrating technology “more than half of the time.” This finding is important because we know that transforming a teacher, a classroom, or a school is a process that does not happen overnight. We are interested in promoting a culture of technology integration that celebrates all successes, whether they be big (i.e., a teacher transforming his classroom into a student-centered learning environment) or small (i.e., a reluctant teacher setting

up her Google Classroom to push out and receive student assignments). This finding is a reminder that recognition motivates students as well as teachers.

Figure 13. Frequency with which Teachers Feel Rewarded for Integrating Technology



BRIGHTBYTES DATA SUMMARY

The Nevada Ready 21 data are commendable for the first year of deployment. Our NR21 overall CASE score and individual domain scores exceed the national average of all service agencies that utilize the Technology & Learning module. As shown in Figure 14, the Nevada Ready 21 Project CASE score is 1109 compared to 1065 nationally. In the Classroom domain, our overall score of 1041 places us firmly in the proficient maturity level for indicators related to 21st century skills and digital citizenship. This means we have a solid foundation upon which to move our teachers and students forward.

Figure 14. Nevada Ready 21 CASE Scores Compared to All Technology & Learning

SERVICE AGENCY	DATE RANGE	OVERALL	CLASSROOM	ACCESS	SKILLS	ENVIRONMENT
Nevada Ready 21 Project	2016 - Present	1109	1041	1230	1142	1122
BENCHMARKS	DATE	OVERALL	CLASSROOM	ACCESS	SKILLS	ENVIRONMENT
All Technology & Learning	As of May 15, 2017	1065	980	1181	1130	1083

We also have an opportunity to build on a solid foundation of teacher and student skills by focusing future coaching and support on technological pedagogy. We can start to transition teachers into transformative uses of technology. Our data on school environment indicators are strong overall, and offer insight into areas where we can help schools grow, such as building school culture that rewards technology integration.

PERFORMANCE MANAGEMENT

The NR21 Logic Model is the foundation upon which the performance management plan is built. The logic model reflects a focus on the influential factors and assumptions that underlie the key components of the NR21 program. The key components, operationally defined in the NR21 Fidelity Rubric, lead to the short, mid, and long term outcomes of the program.

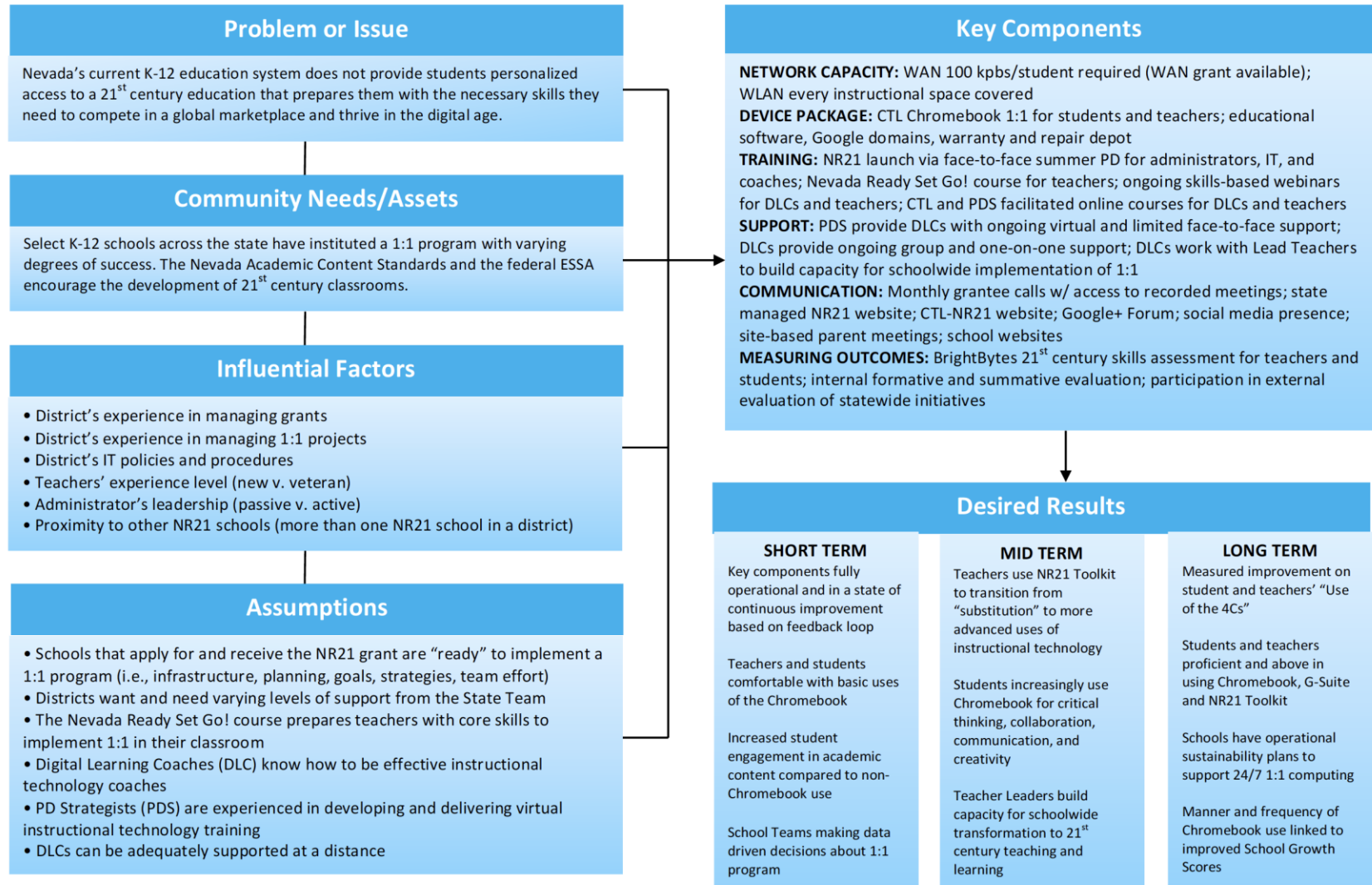
The Key Components of the NR21 Logic Model are: Network Capacity, Device Package, Training, Support, Communication, and Outcomes. The model reflects our belief that investing in these areas will lead to the short, medium, and long term outcomes we expect from the program. An example of progressive attainment of project goals is evident in our near-term expectation that schools make data-driven decisions about their 1:1 program, as opposed to our long-term expectation that the manner and frequency with which the Chromebooks are used is linked to improved school growth scores.

The Fidelity Rubric includes multiple indicators that are tracked for each school, and allow us to calculate a score that coincides with a low, moderate, or high level of implementation fidelity. While these data are useful, we believe that a fidelity score does not capture the full scope of implementation at the school level. As such, we conduct site visits to check in with coaches, teachers, students, and administrators. Establishing a baseline for student achievement, and longitudinally tracking proficiency on Nevada's CRT, is also part of the Nevada Ready 21 performance management plan.

The NR21 Logic Model appears on the next page, followed by a description of the fidelity rubric and site visits.

LOGIC MODEL

Nevada Ready 21 Logic Model



FIDELITY RUBRIC

The Nevada Ready 21 Fidelity Rubric serves as a guide by which the NR21 State Team can gauge, on an annual basis, the extent to which participating schools are implementing the key components of NR21 with fidelity. We identified multiple indicators for each key component and then operationally defined them in order to generate score ranges that are used to measure fidelity of implementation. The NR21 Fidelity Rubric includes four Key Components (Network Capacity; Digital Learning Coach and Teacher Training; Site-Based Implementation and Capacity Building; and Program Outcomes) and 24 indicators.

Every indicator has a score range of “0-1,” “0-2,” or “0-3,” and the fidelity rubric includes qualifiers for each score. Each school receives a score on every indicator, and the indicator scores are combined to generate a component score. Component scores fall within a range that equates to low, moderate, or high fidelity. The component score for each school is then used to determine program level fidelity of implementation. The threshold for high fidelity at the program level is set at 75 percent. If 75 percent of schools have high fidelity on a given component, then the component was implemented with high fidelity at the program level.

In 2016-17, fidelity of implementation at the program level was high for Key Component 1, Network Capacity. Fidelity of implementation was moderate on Key Component 2-4: NR21 Professional Development, Implementation/Capacity Building, and Program Outcomes. Table 4, on the following page, shows the number of schools that implemented each component with low, moderate, or high levels of fidelity. The data are typical for the first year of deployment and supplies us with information that will help us provide targeted support.

Table 3. Year 2 Program Level Fidelity of Implementation

Key Component	Number of Schools w/ High Fidelity	Percentage of Schools w/ High Fidelity	Threshold Met for Program Fidelity?
Network Capacity	23	100%	Yes
Professional Development	8	35%	No
Implementation/Capacity Building	12	52%	No
Program Outcomes	10	43%	No

Table 4. Number of Schools with Low, Moderate, and High Fidelity of Implementation

Key Component	Low Fidelity	Moderate Fidelity	High Fidelity
Network Capacity	0	0	23
NR21 Professional Development	1	11	11
Site-Based Implementation/Capacity Building	0	11	12
Program Outcomes	1	12	10

SITE VISITS

The performance management team conducted site visits at every NR21 school in fall 2016 and at a random sample of schools in spring 2017. The focus of fall site visits was to connect with grantees in person and gather information about their success and challenges to date. Teachers, Digital Learning Coaches, and principals were interviewed and the data were used to inform project planning and implementation strategies, and further define Professional Development Strategists' scope of work. Providing a personal, face-to-face touch at each school helped build rapport between schools and the state team and also provided the state team with context-based information about each school that is difficult to capture on surveys project-wide GoTo Meetings. The focus of spring site visits was to observe NR21 classroom and document typical teacher and student uses of the Chromebook.

NEVADA CRT

In the first year of deployment, the connections between NR21 and students' performance on Nevada's criterion referenced state assessment are tenuous at best. Still, we are interested in tracking the impact of NR21 on state assessment scores. We will prepare an addendum to this report when 2017 test scores are released; these data will serve as the baseline against which we measure changes in student performance on the state assessment.

NR21 IMPLEMENTATION SUMMARY

Nevada Ready 21 set out to provide students with an equitable, technology-rich education that supports high standards, an engaging learning environment, and the development of the 21st century skills they will need to fuel the economic growth of the state. Data from our first year of deployment indicate that we are on track to realize this vision. We are seeing success in our tiered model of professional development in which Professional Development Strategists support Digital Learning Coaches who support Lead Teachers, who in turn build site-based capacity for 21st century school transformation. Teachers are in various stages of technology adoption, but our data indicate that the Chromebooks are used frequently, are used across subject areas.

The affordances of supplying schools with 1:1 devices are many. At the end of our first year of deployment, NR21 students are more attentive and engaged, more likely to receive individuated instruction, more involved in project-based learning, more likely to communicate with their teacher, and more likely to collaborate with their peers.

As we look ahead to our second year of deployment, we will support the growth and sustainability of NR21 in the following ways:

- Provide sustainability planning for school administrators
- Provide leadership support for school administrators
- Provide onboarding for new Digital Learning Coaches
- Give coaching support to new and returning Digital Learning Coaches
- Release an updated Nevada Ready Set Go! course revised with feedback from teachers, and development input from Digital Learning Coaches
- Pilot the use of XPanels, a product that enables touchscreen capability when attached to the Chromebook
- Plan ongoing professional development informed by NR21 Project BrightBytes data
- Develop more PDS-facilitated Canvas courses